



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
NATIONAL MARINE FISHERIES SERVICE  
Northwest Region  
7600 Sand Point Way N.E., Bldg. 1  
Seattle, WA 98115

Refer to:  
2002/01314

February 21, 2003

Mr. Lawrence C. Evans  
Portland District, Corps of Engineers  
CENWP-OP-GP (Ms. Kathryn Harris)  
P. O. Box 2946  
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for the Georgia-Pacific Bulkhead Replacement Project, Yaquina River Basin, Lincoln County, Oregon (Corps No. 2002-00884)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by the National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) for the Georgia-Pacific Bulkhead Replacement Project, Lincoln County, Oregon. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*). Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that are necessary and appropriate to minimize the potential for incidental take associated with this project. This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and its implementing regulations (50 CFR 600).

Please direct any questions regarding this letter to Robert Anderson of my staff in the Oregon Habitat Branch at 503.231.2226.

Sincerely,

*for Michael R. Couse*

D. Robert Lohn  
Regional Administrator



# Endangered Species Act - Section 7 Consultation Biological Opinion

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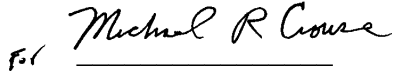
## Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

Georgia-Pacific Bulkhead Replacement Project,  
Yaquina River Basin, Lincoln County, Oregon  
(Corps No. 2002-00884)

Agency: U.S. Army Corps of Engineers

Consultation  
Conducted By: National Marine Fisheries Service,  
Northwest Region

Date Issued: February 21, 2003

Issued by:   
D. Robert Lohn  
Regional Administrator

Refer to: 2002/01314

## TABLE OF CONTENTS

1. INTRODUCTION .....	<a href="#">1</a>
1.1 Background .....	<a href="#">1</a>
1.2 Proposed Action .....	<a href="#">1</a>
1.2.1 Conservation Measures .....	<a href="#">2</a>
2. ENDANGERED SPECIES ACT .....	<a href="#">2</a>
2.1 Biological Opinion .....	<a href="#">2</a>
2.1.1 Biological Information .....	<a href="#">2</a>
2.1.2 Evaluating Proposed Actions .....	<a href="#">3</a>
2.1.2.1 Biological Requirements .....	<a href="#">4</a>
2.1.2.2 Environmental Baseline .....	<a href="#">4</a>
2.1.3 Analysis of Effects .....	<a href="#">5</a>
2.1.3.1 Effects of Proposed Action .....	<a href="#">5</a>
2.1.3.2 Cumulative Effects .....	<a href="#">9</a>
2.1.4 Conclusion .....	<a href="#">9</a>
2.1.5 Reinitiation of Consultation .....	<a href="#">9</a>
2.2 Incidental Take Statement .....	<a href="#">10</a>
2.2.1 Amount or Extent of Take .....	<a href="#">10</a>
2.2.2 Reasonable and Prudent Measures .....	<a href="#">11</a>
2.2.3 Terms and Conditions .....	<a href="#">11</a>
3. MAGNUSON-STEVEN'S FISHERY CONSERVATION AND MANAGEMENT ACT ..	<a href="#">14</a>
3.1 Background .....	<a href="#">14</a>
3.2 Magnuson-Stevens Fishery Conservation and Management Act .....	<a href="#">14</a>
3.3 Identification of EFH .....	<a href="#">15</a>
3.4 Proposed Action .....	<a href="#">16</a>
3.5 Effects of Proposed Action .....	<a href="#">16</a>
3.6 Conclusion .....	<a href="#">16</a>
3.7 EFH Conservation Recommendations .....	<a href="#">16</a>
3.8 Statutory Response Requirement .....	<a href="#">18</a>
3.9 Supplemental Consultation .....	<a href="#">18</a>
4. LITERATURE CITED .....	<a href="#">19</a>

## **1. INTRODUCTION**

### **1.1 Background**

On October 22, 2002, the National Marine Fisheries Service (NOAA Fisheries) received a letter from the U.S. Army Corps of Engineers (Corps) requesting formal consultation pursuant to the Endangered Species Act (ESA) for issuance of a permit by the Corps under section 10 of the Rivers and Harbors Act to authorize Georgia-Pacific to replace a bulkhead in the Yaquina River, Lincoln County, Oregon. Enclosed with the letter was a proposal describing the proposed action and potential effects that may result from its implementation. In the proposal, the Corps determined that the proposed action was likely to adversely affect Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch*), an ESA-listed species.

This biological opinion (Opinion) considers the potential effects of the proposed action on OC coho salmon, which occur in the proposed action area. OC coho salmon were listed as threatened under the ESA on August 10, 1998 (63 FR 42587) and protective regulations were issued on July 10, 2000 (65 FR 42422). The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of OC coho salmon. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

### **1.2 Proposed Action**

The proposed action is issuance of a permit by the Corps under section 10 of the Rivers and Harbors Act to authorize replacement of three sections of an existing deteriorated treated wood bulkhead with steel sheet pile for a total of 415 linear feet along the north shore of the Yaquina River (river mile 13.3 to river mile 13.6). Steel sheet piling would be driven to a depth of 28 feet below mud line, with 12 feet above mud line on the backside of the existing treated wood bulkhead. Each sheet piling would have two, 3-inch diameter drain holes, one located 4 feet below top-of-piling, the second located one foot above mud line. The existing sections of the deteriorated treated wood bulkhead would be removed after the sheet piling is in place. Treated wood pilings and bulkhead materials would be taken to an upland landfill owned by Georgia-Pacific. The purpose of the proposed action is to replace deteriorated bulkhead sections that provide structural support for the company's wastewater treatment lagoons.

Site restoration (conservation measures 15.0, 15.1, 16.0, 16.1, and 16.1.3) would include reshaping of disturbed river banks to pre-project conditions, and planting all disturbed areas on the river-side of the bulkhead with native species of riparian trees and shrubs to re-establish riparian functions.

Equipment for bulkhead construction and removal activities would operate from the existing dike or a barge. Use of treated wood is not proposed.

All in-water work (to include piling and bulkhead removal and installation) is proposed to occur during the in-water work window recommended by the Oregon Department of Fish and Wildlife (ODFW), November 1 through February 15 (ODFW 2000), when listed salmon are unlikely to be in the project vicinity, and during low tides to minimize sediment delivery to the river and harassment of listed species.

### 1.2.1 Conservation Measures

NOAA Fisheries regards the conservation measures included in the consultation request as intended to minimize adverse effects to OC coho salmon and their habitats, and considers them to be part of the proposed action. Conservation measures in the following categories would apply (see consultation proposal for details):

In-water work restrictions	Water intake screening
Fish passage	Pollution and Erosion Control
Removal of treated wood	Capture and release of listed fish
Restricted use of heavy equipment	Conservation of native materials
Isolation of in-water work area	Earthwork
Compensatory mitigation	Site restoration

## 2. ENDANGERED SPECIES ACT

### 2.1 Biological Opinion

#### 2.1.1 Biological Information

OC coho salmon use in the action area includes rearing and migration. The timing of life history events of OC coho salmon in the Yaquina River basin is summarized in Table 1.

**Table 1.** OC coho salmon life history (Weitkamp 1995, Steelquist 1992)

	J	F	M	A	M	J	J	A	S	O	N	D
River Entry												
Spawning												
Intragravel Development												
Juvenile Rearing												
Juvenile Out-migration												

Estimated escapement of coho salmon in coastal Oregon was about 1.4 million fish in the early 1900s, with harvest of nearly 400,000 fish (Weitkamp *et al.* 1995). Abundance of wild OC coho salmon declined during the period from about 1965 to 1975, and fluctuated at low levels through the 1980s and early 1990s (Nickelson *et al.* 1992). Lichatowich (1989) concluded that production potential (based on stock recruit models) for OC coho salmon in coastal Oregon rivers was only about 800,000 fish, and associated this decline with a reduction in habitat capacity of nearly 50%. Recent estimates of wild spawner abundance in this evolutionarily significant unit (ESU) has ranged from about 16,500 adults in 1990, to nearly 60,000 adults in 1996, and 35,000 adults in 2001 (ODFW 2002). The current status of OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened.

Estimated spawning populations for naturally-produced coho in the Yaquina River basin averaged 2145 adults from 1990 through 2001. These results are summarized in Table 2.

**Table 2.** Estimated spawning populations for naturally-produced coho in the Yaquina River basin (Jacobs *et al.* 2001, ODFW 2002)

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Estimated Yaquina River Basin Population	381	380	633	549	2448	5668	5127	384	365	2588	628	2294

Survey data collected by ODFW in the Yaquina River basin estimated juvenile densities ranging from 0.02 to 0.41 fish m<sup>-2</sup> (Rodgers 2001).

### 2.1.2 Evaluating Proposed Actions

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA (50 CFR 402). NOAA Fisheries must determine whether the action is likely to jeopardize the listed species. This analysis involves the initial steps of defining the biological requirements and current status of the listed species, and evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmonid's life stages that occur beyond the action area. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, it must identify reasonable and prudent alternatives to the action.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries considers the extent to which the proposed action impairs the function of essential elements necessary for juvenile and adult migration, spawning, and rearing of OC coho salmon under the existing environmental baseline. NOAA Fisheries' essential fish habitat (EFH) analysis considers the effects of proposed actions on EFH and associated species and their life history stages, including cumulative effects and the magnitude of such effects.

#### **2.1.2.1 Biological Requirements**

The first step in the methods NOAA Fisheries uses for applying the ESA to listed salmon is to define the biological requirements of the species most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list OC coho salmon for ESA protection and also considers new data available that are relevant to the determination.

The relevant biological requirements are those necessary for OC coho salmon to survive and recover to naturally-reproducing population levels at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration.

#### **2.1.2.2 Environmental Baseline**

The action area is defined as all areas to be affected directly or indirectly by the Federal action, and not merely the immediate area involved in the proposed action (50 CFR 402.02). The direct effects occur at or beyond the project site based on the potential for displacement, injury to or killing of OC coho salmon, increases in total suspended solids, and discharge of toxins (*e.g.*, polycyclic aromatic hydrocarbons [PAHs]) into the Yaquina River. Indirect effects may occur beyond the project site when actions described in this Opinion lead to additional activities that contribute to aquatic habitat degradation. For this consultation, the action area includes all riverine habitats accessible to OC coho salmon in the Yaquina River from river mile 13.0 to river mile 14.0, also including the lower 0.25 miles of Depot Slough and Olalla Slough, as well as the channel migration zones (CMZ) of the three waterways.

Regulations implementing section 7 of the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, state, or private actions and other human activities in the action area. The environmental baseline also includes the anticipated effects of all proposed Federal projects in the action area that have undergone section 7 consultation, and

the impacts of state and private actions that are contemporaneous with the consultation in progress.

Land uses in the action area include industrial and urban-residential. Riparian areas and stream channels in the action area have been damaged by industrial development activities and dredging (navigation channel maintenance) related to these land uses, as well as by splash dams, in-stream mining, logging, and agricultural practices throughout the watershed (FEMAT 1993, Botkin *et al.* 1995, OCSRI 1997, Risser 2000). Habitat changes that have contributed to the decline of OC coho in the action area include: (1) Reduced biological, chemical, and physical connectivity between streams, riparian areas, flood plains, and uplands; (2) elevated fine sediment loads; (3) reduced instream and riparian large woody debris; (4) loss or degradation of riparian vegetation; (5) altered stream channel morphology (*e.g.*, increased width-to-depth ratios and entrenchment); (6) degraded water quality; (7) altered base and peak stream flows; and (8) fish passage impediments (OCSRI 1997).

The Yaquina River is on the Oregon Department of Environmental Quality (ODEQ) 303(d) List of Water Quality Limited Water Bodies for temperature and bacteria.

Not all of the biological requirements of the subject species within the action area are being met under current conditions. Based on the best available information on the status of the affected species, population status, trends, and genetics, and the environmental baseline conditions within the action area, significant improvement in habitat conditions over those currently available under the environmental baseline is needed to meet the biological requirements for survival and recovery of this species.

### **2.1.3 Analysis of Effects**

#### **2.1.3.1 Effects of Proposed Action**

The proposed action is likely to temporarily displace rearing juvenile OC coho salmon, and may injure or kill juvenile OC coho salmon during installation of steel sheet piling, removal of the existing treated wood bulkhead, and de-watering activities. Fish removal, fish handling, temporary increases in total suspended solids, improved riparian functions from restoration, altered riverine processes, resuspension of contaminated sediments, and introduction of toxics into the river are also possible outcomes of the proposed action.

##### **2.1.3.1 Fish Harassment**

Fish could be killed, or more likely temporarily displaced, by in-water work activities (*e.g.*, sheet piling installation, bulkhead removal, and fish removal and handling during de-watering of the work site). The most lethal biological effects of the proposed action on OC coho salmon would likely be caused by the isolation of in-water work areas and fish removal and handling. Although in-water work area isolation is itself a conservation measure intended to minimize adverse effects from instream construction activities to fish present in the work isolation area,



some fish could be captured, handled, and released. Capturing and handling fish causes physiological stress, though overall effects of the procedure are generally short-lived if appropriate precautions are exercised. The primary factors controlling the likelihood of stress and death from handling are differences in water temperatures (between the stream and transfer containers), dissolved oxygen concentrations, the amount of time that fish are held out of the water, and the degree of physical trauma. Stress on salmonids increases rapidly from handling if the water temperature exceeds 18°C or dissolved oxygen concentration is below saturation.

Restricting construction activities to the time of year and portion of the tidal cycle when listed salmon are least likely to be present in the project vicinity, prohibiting construction equipment from being stationed or operated below mean high tide (MHT), conducting fish removal activities under the supervision of a fishery biologist experienced with handling ESA-listed species, and work area isolation will minimize harassment of the listed species.

#### **2.1.3.1.2 Water Quality**

##### Total Suspended Solids

The proposed in-water work activities (*e.g.*, steel sheet piling installation, and bulkhead demolition) are likely to temporarily increase concentrations of total suspended solids (TSS). Potential effects of exposure to elevated TSS on OC coho salmon include, but are not limited to: (1) Reduction in feeding rates and growth; (2) increased mortality; (3) physiological stress; (4) behavioral avoidance; (5) reduction in macroinvertebrate populations; and (6) temporary beneficial effects. Influences of TSS and turbidity (defined as a measurement of relative clarity due to an increase in undissolved particles [suspended solids]) on fish reported in the literature range from beneficial to detrimental. Potential beneficial effects include a reduction in piscivorous fish/bird predation rates, enhanced cover conditions, and improved survival conditions.

Turbidity, at moderate levels, has the potential to reduce primary and secondary productivity, and at high levels, has the potential to interfere with feeding and to injure and kill adult and juvenile fish (Spence *et al.* 1996, Bjornn and Reiser 1991). Other behavioral effects on fish, such as gill flaring and feeding changes, have been observed in response to pulses of suspended sediment (Berg and Northcote 1985). Fine redeposited sediments also have the potential to reduce primary and secondary productivity (Spence *et al.* 1996), and to reduce incubation success and interstitial rearing space for juvenile salmonids (Bjornn and Reiser 1991).

Salmonid fishes have been observed to move laterally and downstream to avoid turbid plumes (Sigler *et al.* 1984, Lloyd 1987, Servizi and Martens 1991). Juvenile salmonid fishes tend to avoid streams that are chronically turbid, such as glacial streams or those disturbed by human activities, except when the fish must traverse these streams along migration routes (Lloyd *et al.* 1987). In addition, a potential positive effect is providing refuge and cover from predation; fish that remain in turbid waters experience a reduction in predation from piscivorous fish and birds (Gregory and Levings 1998). In habitats with intense predation pressure, this provides a

beneficial trade-off (*e.g.*, enhanced survival) to the cost of potential physical effects (*e.g.*, reduced growth).

Exposure duration is a critical determinant of the occurrence and magnitude of physical or behavioral effects (Newcombe and MacDonald 1991). Salmonid fishes have evolved in systems that periodically experience short-term pulses (days to weeks) of high suspended sediment loads, often associated with floods, and are adapted to such high pulse exposures. Adult and larger juvenile salmonid fishes appear to be little affected by the high concentrations of suspended sediments that occur during storm and snowmelt runoff episodes (Bjornn and Reiser 1991). However, chronic exposure can cause physiological stress that can increase maintenance energy and reduce feeding and growth (Redding *et al.* 1987, Lloyd 1987, Servizi and Martens 1991).

Increases in TSS can adversely affect filter-feeding macroinvertebrates and fish feeding. At concentrations of 53 to 92 ppm (24 hours) Gammon (1970) reported reductions in macroinvertebrate populations. At concentrations of 250 ppm (1 hour) Noggle (1978) reported a 95% reduction in feeding rates in juvenile coho salmon. At concentrations of 1200 ppm (96 hours) mortality to juvenile coho salmon were reported (Noggle 1978). Concentrations of 53.5 ppm (12 hours) caused physiological stress and changes in behavior in coho salmon (Berg 1983). Concentrations and exposure times from in-water work activities that meet or exceed these effect levels are reasonably certain to harm or kill OC coho salmon present in the action area. OC coho salmon are likely to avoid waters that are chronically turbid, and therefore adverse effects are less likely after initial exposure. Restricting construction activities to the time of year and portion of the tidal cycle when listed salmon are least likely to be present in the project vicinity, and prohibiting construction equipment from being stationed or operated below MHT will minimize adverse effects caused by TSS.

#### Sediment and Water Quality Contamination from Treated Wood

The existing bulkhead totals 1,500 linear feet and is constructed of treated wood; 415 linear feet would be replaced with steel sheet piling. Sediments in the action area are likely contaminated with elevated concentrations of copper and PAHs, and probably many other creosote components. Demolition of the treated wood bulkhead may adversely affect OC coho salmon due to resuspension of contaminated sediments into the Yaquina River.

Migration of creosote and its components (*e.g.*, copper and PAHs) from treated wood in lotic environments may adversely affect juvenile salmonid fishes (NMFS 1998). Copper is the main metal of concern because it is the most acutely toxic. Copper also leaches the most readily, followed by arsenic and chromium (Warner and Solomon 1990). Creosote contains over 300 compounds, including a variety of PAHs. Some PAHs are very toxic and bioconcentrate (NMFS 1998). Potential effects of elevated water column and sediments concentrations of copper and PAHs to OC coho salmon include, but are not limited to: (1) Reduced growth and survival rates; (2) altered hematology; and (3) reproductive effects, including reduced frequency of spawning, reduced egg production, and increased deformities in fry (Sorensen 1991, Eisler 1998).

Removal of 415 linear feet of 1500 feet of the treated wood bulkhead would reduce direct leaching of toxic substances known to adversely effect salmonid fishes, and is likely to improve sediment and water quality conditions in the long term.

Restricting construction activities to the time of year and portion of the tidal cycle when listed salmon are least likely to be present in the project vicinity, hauling treated wood materials to an upland disposal site, and prohibiting construction equipment from being stationed or operated below MHT will minimize adverse effects from removal of treated wood structures.

#### **2.1.3.1.3 Riverine Processes**

Rivers are dynamic systems that perpetually alter their courses in response to multiple physical features. Effects on riverine processes from bank hardening (*e.g.*, bulkheads) include stream channel simplification, altered hydraulic processes, constrained stream channel migration (reduced sinuosity), loss of native sediment recruitment, and elimination of shallow-water habitat. Bank hardening may shift erosion points either upstream, due to headcutting, or downstream, due to transfer of stream energy. Bank hardening can also cause an increase in stream velocities that contribute to channel incision and streambank failure.

Fish habitats are enhanced by the diversity of habitats at the land-water interface and adjacent river bank (USACE 1977). As erosive forces affect different locations in the river, and bank hardening occurs in response, the river eventually can attain a continuous fixed alignment lacking habitat complexity (USACE 1977). Maintaining hard-engineering structures in the CMZ is likely to hinder attainment of functional riparian vegetation unless habitat forming features are incorporated into the proposed action. The proposed site restoration would re-establish riparian habitat functions (*e.g.*, large woody debris recruitment potential, streambank stabilization, riparian reserves) in the area of the bulkhead, which is currently lacking the physical materials necessary to attain functional riparian vegetation.

#### **2.1.3.1.4 Site Restoration**

Site restoration would include reshaping of disturbed streambanks to pre-project conditions, and planting all disturbed areas on the river-side of the bulkhead with native species of riparian trees and shrubs to re-establish functional riparian vegetation. The proposed site restoration would enhance streambank stability, provide nutrients and cover, and provide a potential recruitment source of large woody debris over the long term (greater than 15 years). Limited riparian functions would be provided until the plantings are fully established. Overall, the proposed site restoration is likely to improve riparian habitat structure and its associated functions in the project area.

### **2.1.3.2 Cumulative Effects**

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Other activities within the watershed have the potential to impact fish and habitat within the action area. Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes.

Non-federal activities within the action area are expected to increase due to a projected 34% increase in human population over the next 21 years in Oregon (ODAS 1999). Thus, NOAA Fisheries assumes that future private and state actions would continue within the action area, increasing as population density rises.

### **2.1.4 Conclusion**

NOAA Fisheries has concluded that the Georgia-Pacific Bulkhead Replacement Project is not likely to jeopardize the continued existence of OC coho salmon. In reaching this conclusion, NOAA Fisheries used the best available scientific and commercial data to apply its jeopardy analysis, and analyzed the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, and together with cumulative effects. This conclusion is based in part on incorporation of conservation measures into the proposed action that would avoid or minimize adverse effects to listed coho and their habitat by: (1) Limiting all in-water work activities (including piling and bulkhead installation and removal) to the in-water work window recommended by the ODFW (November 1 through February 15) when listed coho are least likely to be in the action area, and to low tides thereby reducing sedimentation to the river, and minimizing harassment of the listed species; (2) prohibiting stationing or operation of construction equipment below MHT; (3) conducting fish removal activities under the supervision of a fisheries biologist experienced with ESA-listed fish and work area isolation; (4) completing riparian restoration to improve riparian functions (*e.g.*, large woody debris recruitment, streambank stability) as riparian plantings become established over the long term (greater than 15 years) and; (5) the proposed action is not likely to impair properly functioning habitat, appreciably reduce the functioning of already impaired habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

### **2.1.5 Reinitiation of Consultation**

This concludes formal consultation on the subject actions in accordance with 50 CFR 402.14(b)(1). The Corps must reinitiate consultation if: (1) The amount or extent of incidental take is exceeded; (2) the actions are modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this Opinion; (3) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (4) a new species is listed or critical habitat is designated

that may be affected by the action (50 CFR 402.16). In instances where the amount or extent of authorized incidental take is exceeded, any operations causing such take must cease pending conclusion of the reinitiated consultation.

## **2.2 Incidental Take Statement**

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. “Harm” is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. “Harass” is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. “Incidental take” is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

### **2.2.1 Amount or Extent of Take**

NOAA Fisheries anticipates that the proposed action covered by this Opinion is reasonably certain to result in incidental take (lethal and non-lethal) of juvenile OC coho as a result of: (1) In-water work activities (*e.g.*, steel sheet piling installation and bulkhead demolition); (2) fish removal and handling; (3) water quality degradation from resuspension of contaminated sediments; and (4) temporary increases in total suspended solids (TSS). Take in association with water quality changes is largely unquantifiable, although reasonably certain based on the analysis in section 2.1.3. Take from steel sheet piling installation, bulkhead demolition, work area isolation, and fish removal and handling may be either lethal or non-lethal. The extent of non-lethal take for this opinion is limited to take resulting from activities undertaken as described in this Opinion that occur in the action area, which is defined as all riverine habitats accessible to OC coho salmon in the Yaquina River from river mile 13.0 to river mile 14.0, including the lower 0.25 miles of Depot Slough and Olalla Slough, and the channel migration zones of the three waterways. Non-lethal take from fish removal and handling shall not exceed 100 juvenile OC coho salmon.

Lethal take resulting from the capture or killing of listed salmonids is limited to activities described in this Opinion that occur in the isolated, in-water work area during the approved in-water work period (November 1 through February 15). Lethal take shall not exceed five juvenile OC coho salmon.

### **2.2.2 Reasonable and Prudent Measures**

NOAA Fisheries believes the following reasonable and prudent measures are necessary and appropriate to minimize take of the above species. Minimizing the amount and extent of take is essential to avoid jeopardy to the listed species.

The Corps shall ensure that:

1. The amount and extent of incidental take from the proposed actions is minimized by ensuring that the conservation measures included in the consultation request are fully implemented.
2. The amount and extent of incidental take from construction activities is minimized by ensuring that in-water work is limited to the time when effects to OC coho salmon would be minimized.
3. The disturbance to near-shore and riparian habitat features is minimized, or where effects are unavoidable, near-shore and riparian habitat features are restored.
4. The disturbance to riverine habitats from use of barges for construction activities is minimized.
5. The potential for contamination of riverine habitat from removal of treated wood is minimized.
6. The reasonable and prudent measures, fish removal and handling efforts, conservation measures, and site restoration efforts are monitored and evaluated both during and following construction.

### **2.2.3 Terms and Conditions**

In order to be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions should be incorporated into construction contracts and subcontracts to ensure that the work is carried out in the manner prescribed. Implementation of the terms and conditions within this Opinion will further reduce the risk of adverse affects to fish. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (conservation measures), the Corps shall ensure that:
  - a. Conservation measures 1 through 16.5 are fully implemented, with the exception of conservation measures 16.1.2 and 16.3 (maintenance dredging). Maintenance dredging is not authorized under this Opinion.

2. To implement reasonable and prudent measure #2 (in-water work), the Corps shall ensure that:
  - a. All work within the CMZ is completed within the recommended in-water work period, November 1 through February 15, and during low tides. Any adjustments to the in-water work period must be approved in writing by NOAA Fisheries.
  - b. Before and intermittently during pumping to isolate an in-water work area, an attempt must be made to capture and release fish from the isolated area to minimize risk of injury.
    - i. Complete transfers using a sanctuary net that holds water during transfer to prevent the added stress of an out-of-water transfer.
    - ii. A description of any capture and release effort will be included in a post project report, including the name and address of the supervisory fish biologist, methods used to isolate the work area and minimize disturbances to ESA-listed species, stream conditions before and following placement and removal of barriers, the means of fish removal, the number of fish removed by species, the condition of all fish released, and any incidence of observed injury or mortality.
    - iii. If a sick, injured or dead specimen of a threatened or endangered species is found, the finder must notify the Vancouver Field Office of NOAA Fisheries Law Enforcement at 360.418.4246. The finder must take care in handling of sick or injured specimens to ensure effective treatment, and in handling dead specimens to preserve biological material in the best possible condition for later analysis of cause of death. The finder also has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not disturbed unnecessarily.
3. To implement reasonable and prudent measure #3 (site restoration), the Corps shall ensure that:
  - a. Alteration of native vegetation is minimized. Where possible, native vegetation will be removed in a manner that ensures that roots are left intact.
  - b. The alteration or disturbance of streambanks and existing riparian vegetation is minimized.
  - c. No herbicides are applied in association with the proposed action.
  - d. The riparian planting sites are monitored for five years with a required survival rate or plant cover of 80%.
4. To implement reasonable and prudent measure #4 (barge use), the Corps shall ensure that:
  - a. Any barge used maintains a minimum water depth of 10 feet between the bottom of the barge and the river bottom.
5. To implement reasonable and prudent measure #5 (treated wood), the Corps shall ensure that:

- a. All treated wood from demolition of the existing piling and bulkhead is completely removed, and disposed of at an approved upland landfill.
  - b. In-water work is isolated during bulkhead demolition to prevent potentially contaminated sediments and treated wood from entering the Yaquina River. No sediment generated during bulkhead installation or removal may be discharged or migrate into the Yaquina River.
  - b. Pilings are removed using a vibratory hammer.
  - c. If pilings break during removal, the stump is removed by cutting the piling 3 feet below the sediment surface, then covered with a substrate appropriate for the site.
6. To implement reasonable and prudent measure #6 (monitoring), the Corps shall ensure that:
- a. Upon completion of construction, a summary of all monitoring data is provided to NOAA Fisheries.
  - b. Post-construction monitoring reports describe the success and/or failure, and actions taken to correct failures of all conservation measures, confirmation of as-built condition, and documentation of planting success. These reports will be submitted as outlined below.
    - i. Post-construction Report. A report on implementation of conservation measures, effects of construction activities on OC coho and their habitat, and as-built components shall be provided within 60 days following completion of the proposed action, and shall include a description of:
      - (1) Specific methods used to minimize sediment mobilization and increases in turbidity.
      - (2) River conditions before and following any wet excavation.
      - (3) Extent, duration, and frequency of any turbidity plumes related to project activities.
      - (4) Any observed injury and/or mortality of fish resulting from project activities.
    - ii. Planting Report. Following the completion of plantings associated with the streambank and adjacent riparian zone, the Corps will provide NOAA Fisheries annually with a report by December 31 describing the success of plantings required under reasonable and prudent measure #3 (site restoration). The report should focus on actions taken to ensure that plantings were done correctly and successful at meeting the objective of 80% or higher survival rate or cover after five years, as well as indicate any replantings completed during the preceding 12 month period. The report shall include photo documentation. Once 80% or greater survival or cover has been documented for five consecutive years, this reporting requirement may be discontinued.



- iii. Monitoring reports shall be submitted to:  
National Marine Fisheries Service  
Oregon Habitat Branch, Habitat Division  
Attn: 2002/01314  
525 NE Oregon Street, Suite 500  
Portland, OR 97232-2778

### **3. MAGNUSON-STEVENSON FISHERY CONSERVATION AND MANAGEMENT ACT**

#### **3.1 Background**

On October 22, 2002, NOAA Fisheries received a letter from the Corps requesting essential fish habitat (EFH) consultation pursuant to the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for the subject action. The objective of the EFH consultation is to determine whether the proposed action may adversely affect designated EFH for relevant species, and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH resulting from the proposed action. This consultation is undertaken pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR 600).

#### **3.2 Magnuson-Stevens Fishery Conservation and Management Act**

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting the definition of essential fish habitat: “Waters” include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; “substrate” includes sediment, hard bottom, structures underlying the waters, and associated biological communities; “necessary” means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; and “spawning, breeding, feeding, or growth to maturity” covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation measures for any Federal or state activity that may adversely affect EFH;
- Federal agencies shall within 30 days after receiving conservation measures from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation measures. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation measures of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

### **3.3 Identification of EFH**

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line, and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km)(PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (i.e., natural waterfalls in existence for several hundred years)(PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border.

Detailed descriptions and identifications of EFH for the groundfish species are found in the Final Environmental Assessment/Regulatory Impact Review for Amendment 11 to The Pacific Coast Groundfish Management Plan (PFMC 1998a) and the NMFS Essential Fish Habitat for West Coast Groundfish Appendix (Casillas *et al.* 1998). Detailed descriptions and identifications of EFH for the coastal pelagic species are found in Amendment 8 to the Coastal Pelagic Species Fishery Management Plan (PFMC 1998b). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the Pacific Coast Salmon Plan (PFMC 1999). Assessment of the potential adverse effects to these species' EFH from the proposed action is based on this information.

The Pacific Fisheries Management Council (PFMC) has designated EFH for three species of Pacific salmon: Chinook (*O. tshawytscha*), coho (*O. kisutch*), and Puget Sound pink salmon (*O. gorbuscha*) (PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects to these species' EFH from the proposed action is based on this information.

### **3.4 Proposed Action**

The proposed action is detailed above in section 1.2 of this document. For this consultation, the action area includes all riverine habitats accessible to OC coho salmon in the Yaquina River from river mile 13.0 to river mile 14.0, including the lower 0.25 miles of Depot Slough and Olalla Slough, and the channel migration zones of the three waterways. This area has been designated as EFH for various life stages of chinook salmon, coho salmon, and groundfish species (Table 3).

### **3.5 Effects of Proposed Action**

The proposed action is likely to temporarily degrade water quality due to increases in total suspended solids and resuspension of contaminated sediments, and to temporarily displace chinook salmon, coho salmon, and ground fish species. In the long-term, the action will improve riparian functions in the immediate vicinity of the project.

### **3.6 Conclusion**

The proposed action will adversely affect the EFH for Pacific salmon and ground fish species.

### **3.7 EFH Conservation Recommendations**

Pursuant to section 305(b)(4)(A) of the Magnuson-Stevens Act, NOAA Fisheries is required to provide EFH conservation recommendations for any Federal or state agency action that would adversely affect EFH. The reasonable and prudent measures and the terms and conditions contained in sections 2.2.2 and 2.2.3 are applicable to EFH of Pacific salmon and groundfish species. Therefore, NOAA Fisheries incorporates each of those measures here as EFH conservation recommendations.

**Table 3.** Species with designated EFH found in waters of the State of Oregon.

<b>Ground Fish Species</b>	Blue rockfish ( <i>S. mystinus</i> )	Rougheye rockfish ( <i>S. aleutianus</i> )	Flathead sole ( <i>Hippoglossoides elassodon</i> )
Leopard shark ( <i>Triakis semifasciata</i> )	Bocaccio ( <i>S. paucispinis</i> )	Sharpchin rockfish ( <i>S. zacentrus</i> )	Pacific sanddab ( <i>Citharichthys sordidus</i> )
Soupfin shark ( <i>Galeorhinus zyopterus</i> )	Brown rockfish ( <i>S. auriculatus</i> )	Shortbelly rockfish ( <i>S. jordani</i> )	Petrale sole ( <i>Eopsetta jordani</i> )
Spiny dogfish ( <i>Squalus acanthias</i> )	Canary rockfish ( <i>S. pinniger</i> )	Shortraker rockfish ( <i>S. borealis</i> )	Rex sole ( <i>Glyptocephalus zachirus</i> )
Big skate ( <i>Raja binoculata</i> )	Chilipepper ( <i>S. goodei</i> )	Silvergray rockfish ( <i>S. brevispinus</i> )	Rock sole ( <i>Lepidopsetta bilineata</i> )
California skate ( <i>R. inornata</i> )	China rockfish ( <i>S. nebulosus</i> )	Speckled rockfish ( <i>S. ovalis</i> )	Sand sole ( <i>Psettichthys melanostictus</i> )
Longnose skate ( <i>R. rhina</i> )	Copper rockfish ( <i>S. caurinus</i> )	Splitnose rockfish ( <i>S. diploproa</i> )	Starry flounder ( <i>Platyichthys stellatus</i> )
Ratfish ( <i>Hydrolagus colliei</i> )	Darkblotched rockfish ( <i>S. crameri</i> )	Stripetail rockfish ( <i>S. saxicola</i> )	
Pacific rattail ( <i>Coryphaenoides acrolepis</i> )	Grass rockfish ( <i>S. rastrelliger</i> )	Tiger rockfish ( <i>S. nigrocinctus</i> )	<b>Coastal Pelagic Species</b>
Lingcod ( <i>Ophiodon elongatus</i> )	Greenspotted rockfish ( <i>S. chlorostictus</i> )	Vermillion rockfish ( <i>S. miniatus</i> )	Northern anchovy ( <i>Engraulis mordax</i> )
Cabezon ( <i>Scorpaenichthys marmoratus</i> )	Greenstriped rockfish ( <i>S. elongatus</i> )	Widow Rockfish ( <i>S. entomelas</i> )	Pacific sardine ( <i>Sardinops sagax</i> )
Kelp greenling ( <i>Hexagrammos decagrammus</i> )	Longspine thornyhead ( <i>Sebastolobus altivelis</i> )	Yelloweye rockfish ( <i>S. ruberrimus</i> )	Pacific mackerel ( <i>Scomber japonicus</i> )
Pacific cod ( <i>Gadus macrocephalus</i> )	Shortspine thornyhead ( <i>Sebastolobus alascanus</i> )	Yellowmouth rockfish ( <i>S. reedi</i> )	Jack mackerel ( <i>Trachurus symmetricus</i> )
Pacific whiting (Hake) ( <i>Merluccius productus</i> )	Pacific Ocean perch ( <i>S. alutus</i> )	Yellowtail rockfish ( <i>S. flavidus</i> )	Market squid ( <i>Loligo opalescens</i> )
Sablefish ( <i>Anoplopoma fimbria</i> )	Quillback rockfish ( <i>S. maliger</i> )	Arrowtooth flounder ( <i>Atheresthes stomias</i> )	
Aurora rockfish ( <i>Sebastes aurora</i> )	Redbanded rockfish ( <i>S. babcocki</i> )	Butter sole ( <i>Isopsetta isolepsis</i> )	<b>Salmon</b>
Bank Rockfish ( <i>S. rufus</i> )	Redstripe rockfish ( <i>S. proriger</i> )	Curlfin sole ( <i>Pleuronichthys decurrens</i> )	Coho salmon ( <i>O. kisutch</i> )
Black rockfish ( <i>S. melanops</i> )	Rosethorn rockfish ( <i>S. helvomaculatus</i> )	Dover sole ( <i>Microstomus pacificus</i> )	Chinook salmon ( <i>O. tshawytscha</i> )
Blackgill rockfish ( <i>S. melanostomus</i> )	Rosy rockfish ( <i>S. rosaceus</i> )	English sole ( <i>Parophrys vetulus</i> )	

### **3.8 Statutory Response Requirement**

Please note that the Magnuson-Stevens Act (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

### **3.9 Supplemental Consultation**

The Corps must reinitiate EFH consultation with NOAA Fisheries if either action is substantially revised or new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

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